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luminescence; Professor Setchell, who has spent several seasons in the South Pacific in floristic studies. And in this connection must be mentioned also the unfinished researches of Doctor Mayor himself, who visited the Samoan Islands for the purpose of making observations on the rate and the conditions of the growth of corals, and who was laying plans, up to within a few days of his death, for another expedition to the South Pacific for the purpose of continuing his own and other investigations.

The life of the tropical sea presents unlimited opportunities for fruitful scientific investigation and it is the stated purpose of the laboratory to provide facilities for such investigations from a broad point of view. The published results clearly indicate that this purpose is being achieved in full measure. Students of marine biology confidently hope that the Carnegie Institution of Washington will continue to support the Department of Marine Biology so that the study of life in the sea may be continued with undiminished energy and with unrestricted scope.

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## THE MOUNT EVEREST EXPEDITION

IN an account of the expedition *The Geographical Journal* says that the early climbing season of 1922 was very brief. The expedition reached its base camp below the Rongbuk glacier at the end of April, when winter still held in the valley: and in the first days of June the monsoon broke and the season was over—at any rate until September. In the few weeks available there were two highly successful climbs, and a third which ended badly in the avalanche. Within six weeks most of the best climbers were out of action by frostbite, and the whole party so exhausted by the prolonged exertion above 16,000 feet that there could be no thought of renewing the attack in the autumn.

The final conquest of the mountain must wait, then, for a third year's campaign, organized in the light of this year's experience and this year's great though not complete success. Closer acquaintance with the mountain has shown that the physical difficulties are more

formidable, the physiological difficulties decidedly less, than had been supposed: the organization and equipment were on the right lines and in most respects perfect. But the weather introduces each year an incalculable factor, against which the best schemes may be laid in vain.

In October those members of the expedition who went out from England will reassemble on the platform of the Central Hall to recount their adventures and to receive the hearty congratulations they have earned so well. The meeting will regret that they can not welcome and congratulate with them the four officers of the Indian service whose duty will keep them in India.

By the last reports we are glad to learn that Major Morshead is doing well, and that he will lose no more than the tips of three fingers of the frost-bitten hand. The other members of the party who suffered less are already quite recovered: several are already home and others well on their way. General Bruce with headquarters arrived in Darjeeling on August 2, and the only member of the expedition left in Tibet is Captain Noel, who has established a photographic dark-room at Gyantse, and is hard at work developing many thousands of feet of cinematograph film and a great quantity of plates and panoram films. His leisure he spends in "filming" Tibetan life and customs; and he is not due in England until the middle of October. It will therefore not be possible to show any of the film at the joint meeting of the society and the Alpine Club at the Central Hall on Monday, October 16, when General Bruce and several members of the party will give the first account of their work. A second joint meeting will be held on November 21 for the first show of the film, which will be awaited with great interest. Captain Noel did extraordinarily well in getting his cinematograph camera, fitted with an enormous telephoto lens, to 23,000 feet on the Chang La, and photographing the climbing to about 26,000 feet. He writes that the Sinclair camera and the big lens by Taylor, Taylor & Hobson have been a great success. The latter was a heavy addition to the outfit, but it saved his life in the diaster which befell the third climb-

ing party, for it proved too heavy for the climb in the new soft snow below the Chang La, and he had been compelled to turn back from the rear of the party only a few minutes before the train of porters was carried away by the avalanche.

Captain Noel in his letters mentions many difficulties in photography at extreme altitudes: the most curious is the effect of the dry Tibetan climate on the cinematograph film, which cracks and sparkles with electric sparks when pulled through the hand, so that it is necessary to work with a wet hand when threading the film on the developing frames. Happily this effect was anticipated, and the makers of the Newman-Sinclair camera succeeded in making the film run through the gate without friction, and provided open-mouthed film boxes, so that damage from electrical markings is reduced to a minimum.

The official photographs which have come home from the expedition up to the time of writing comprise about 200 quarter-plate negatives on glass, a certain number of large panorama films, and two small V.P.K. films. These are supplemented by good series of pictures taken by Dr. Longstaff and Captain Finch, which have been placed at the disposal of the committee. A selection of enlargements is shown in the Photograph Room of the society, but the record must be very incomplete until the arrival of Captain Noel in October with all the larger plates. Enlargements from these will be shown as soon as possible, and the Mount Everest Committee will probably arrange for a public exhibition of the pictures in the Alpine Club Hall after Christmas, as was done last January.

## SCIENTIFIC EVENTS

### NITRATES IN SOUTHEASTERN CALIFORNIA

NITROGEN is needed in large quantities for use in fertilizers, in explosives required in engineering and mining, and in munitions made for national defense in war. During the war the demand for nitrates became so urgent that every known source of them in the United States was ransacked to find enough to supply our ever-increasing needs. The world's store-

house for nitrates is Chile, but the growing menace of the submarine made it imperative to divert to other uses the shipping then engaged in the Chile nitrate trade.

Small quantities of nitrates are found in almost every region where the rainfall is very small. The most promising deposits in the United States were those in the Amargosa region, in southeastern California. Before the war some of these deposits had been examined several times, chiefly by private companies that sought to obtain capital for their exploitation, but the reports made were so conflicting that the United States Geological Survey, Department of the Interior, decided to make a careful study of all the deposits in that region.

The nitrate-bearing material, or "caliche," as it is called in California, resembles in character and mode of occurrence the well-known caliche found in Chile, but it is much poorer and thinner. It forms a layer a few inches thick that lies less than a foot below the surface, at the plane of contact between the unaltered bedrock, which there consists chiefly of beds of Tertiary clay shale and the overlying clay soil. A white powdery layer, composed chiefly of sulphate of sodium and calcium, nearly everywhere lies between the caliche and the clay soil. The caliche cuts across successive tilted beds of the underlying clay shale and is thus clearly independent of the geologic structure.

In the examination made by the Geological Survey maps and cross sections were made at many places. Scores of trenches and hundreds of pits were dug down to or into the bedrock, and the soil, caliche and bedrock were then systematically sampled. Many hundred qualitative tests and nearly a thousand quantitative analyses of the caliche were made. The commercial development of the deposits, though they are the most promising in the country, was found to be impracticable, but the results of the investigation should set at rest any uncertainties as to the nature or quantity of the nitrates in the areas examined and should serve as a guide in the exploration of other supposedly nitrate-bearing regions.

An account of this investigation is given in the Geological Survey's Bulletin 724, on "Nitrate Deposits in the Amargosa Region,